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TEACHERS' IMPLEMENTATION OF SCIENTIFIC APPROACH IN TEACHING ENGLISH FOR SENIOR HIGH SCHOOL STUDENTS

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ABSTRACT

The scientific approach constitutes an approach to Indonesia's 2013 curriculum. Since it is imperative for Indonesian education, all teachers need to understand, manage, and apply it in the teaching-learning process. Unfortunately, many English teachers still use inappropriate methods as in the 2013 curriculum. This qualitative research aims at discovering the implementation of a scientific approach by English teachers at State Senior High School in *Lhokseumawe*. The objects were English teachers at SMAN 1 *Lhokseumawe*, SMAN 2 *Lhokseumawe*, and SMAN 5 *Lhokseumawe*. The tools used in this study were observation for three high school English teachers in the schools. The observation results toward the implementation of five scientific approach stages exposed that the English teachers did not carry out the five stages completely. The teacher should master, understand, and apply the teaching process by following the whole stages of the scientific approach. Class mastery and time management are vital for the learning process. Thus, the teachers should consider those points. Hence, interesting supporting media, appropriate learning material, and methods must be considered by the teachers in teaching so that the students will be motivated to learn.

Keywords: *2013 Curriculum, Scientific Approach, Teaching English.*

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INTRODUCTION

The newest curriculum, which is the 2013 Curriculum (K13) enacted by the government as an applicable curriculum that must be applied in all educational units in Indonesia starting from elementary until high school. This curriculum is the revision of the previous curriculum namely the 2006 Curriculum or Competency-Based Curriculum (KTSP), which is considered dissatisfyng to achieve the aim of primary and secondary education (Intansari, 2013; Sundayana, 2015). The 2013 curriculum is designed to achieve the goal of national education. It is stated in the Regulation of Minister of Education and Culture (*Permendikbud*) No. 20 about Competence Standard of Graduate 2016. The goal of national education is to build capacity and form the character and society of a dignified nation to educate the nation's life. It is also used to develop the ability of students to be the human beings who believe in and fear God the Almighty, have noble morals, safe, intelligent, competent, imaginative, autonomous, and become democratic and responsible people. For instance, it does not only focus on knowledge or cognitive skills improvement but also balances out the effective skills and psychomotor skills.

In its application based on the (Kemendikbud, 2013a) and (Hosnan, 2014), there are five steps of a scientific approach in teaching English. They are (1) Observing, (2) Questioning, (3) Experimenting, (4) Associating, and (5) Communicating. Therefore, all teachers are required to be able to apply those steps in the teaching-learning process. Thus, the Indonesian government has made some efforts to improve teacher quality and provide information on implementing the 2013 curriculum and applying scientific approaches to teaching. One of the efforts made by the government through The Ministry of Education and Culture (*Kemendikbud*) is providing assistance or training through 2013 curriculum accompaniment (Pendampingan Kurikulum 2013) in cities and throughout the Indonesia districts to strengthen the understanding of the 2013 Curriculum and to be able to implement the scientific approach in teaching. And, it also helps to solve the numerous challenges that occur during school curriculum implementation.

This effort was also conducted by the teachers in *Lhokseumawe* city, Aceh. Unfortunately, in the reality, we found that many teachers are still teach conventionally in the classroom even though they were certified and had received assistance or training in the 2013 curriculum accompaniment (Pendampingan Kurikulum 2013). It might happen due

to the lack of competency and comprehension in implementing a scientific approach in teaching English. Thus, for those reasons, the comprehension of the concept of the scientific approach of the English teachers at the State Senior High Schools in *Lhokseumawe* needed to be examined.

Moreover, in implementing the scientific approach in teaching English, the teachers did not always follow the five stages because of the particular circumstances (Istiqomah, 2014; Zaim, 2017). Based on an informal interview with an English teacher who teaches an English subject, the writers found that it is not easy for the teacher to apply all of the steps of the scientific approach. When teachers skip one or two steps in the scientific approach, it means that the scientific approach is not optimally applied. This becomes the challenge for the teacher to be creative and innovative to design an English lesson that can include all the steps of a scientific approach in teaching any topic.

There have been studies in terms of scientific approach in teaching English and the 2013 curriculum such as by (Atmarizon & Zaim, 2016; Mahjaty, 2017; Zaim, 2017; Nugraha & Suherdi, 2017; & Indrilla, 2018). From their studies, it can be sum up that there is still a quite limited study reviewed that focuses on English teachers' implementation of the scientific approach, especially at State Senior High Schools (SMAN) in *Lhokseumawe*. Here, the writers conducted a study that relates to the previous studies mentioned above, but it took different schools' locations, situations, and conditions, which is the state senior high schools in *Lhokseumawe*. Therefore, dealing with the scientific approach, the writers intend to formulate a question that must be unswered i.e. how do the English teachers at State Senior High Schools in *Lhokseumawe* implement the scientific approach in teaching English? To answer the question, a study is necessary to condut to find out how the teachers at State Senior High Schools in *Lhokseumawe* implement the scientific approach in teaching English.

LITERATURE REVIEW

Scientific Approach

The learning process can be paired with a scientific process; therefore the 2013 curriculum mandates the essence of the scientific approach to learning. The scientific method generally places a unique phenomenon with specific and detailed studies to then formulate general

conclusions. The scientific method refers to investigative techniques for a phenomenon to acquire new knowledge by correcting and integrating the prior knowledge. Therefore, the scientific methods contain a series of data collection activities through observation or experiment, process information, or data analysis which then formulate and test hypotheses.

The Principle of Scientific Approach

Learning by implementing the scientific approach should be based on several principles as stated by (*Kemendikbud*, 2014), they are; (a) be student-centered, i.e. students engage actively in the development of meaning and interpretation of specific concepts, laws, or principles; (b) develop the self-concept of students i.e. develop a basic concept based on their understanding; (c) prevent verbalism; (d) offer students the opportunity to adapt ideas, laws, and values; (e) push students to improve their thought skills; (f) build student enthusiasm for learning; (g) push students to train their communication skills; (h) possibly develop validation processes for ideas, laws, and values deconstructed in terms of cognitive structure by students; (i) scientific method skills in the creation of ideas, laws, and values; (j) involves potential cognitive mechanisms in stimulating high-quality intellectual growth, especially high order thinking. Learning results are in the forms of ideas, rules, or values that are deconstructed by students with the aid of the instructor. In certain cases students are very difficult to get data promptly, so they prefer not to collect the data needed directly. In this case, the instructor will provide the data required and evaluated by the students.

The Steps in Scientific Approach

Kemdikbud (2013a) and Hosnan (2014) stated that in the context of Curriculum 2013 teaching and learning process, the phases of conducting the scientific method are *observing*, as a phenomenon aspect is observed using the senses (listening, observing, smelling, sensing, or tasting) with or without a method to detect issues; *questioning,* problems-related questions are formulated. This phase formulates hypotheses or temporary answers based on established information. Activities include asking questions, asking and answering questions, and addressing what is not understood or supplementary details for clarity; e*xperimenting* (collecting data or information), in this stage, some activities may be performed such as exploring, observing, conducting experiments, debating, demonstrating, and imitating certain movements, reading

various other materials (in addition to textbooks), and performing interviews or questionnaires to collect data.

The next step is *associating*, the data collected was analyzed by categorizing, associating the phenomena or knowledge to find certain patterns, identifying arguments and concluding the interrelationship between two facts/concepts, and interpreting them; c*ommunicating,* in this step, the answers to questions (conclusions) as the result of the research (associated information/data) are provided in either written or oral form, e.g. written or oral reports, maps, diagrams, graphs, etc. Factual, conceptual, procedural, and/or metacognitive skills are built up to this step; and *creating,* because of the different subject nature, the five steps above can be followed. The regulation does not specifically address this move. In this stage, goods or concepts are produced and/or innovated using the knowledge. What is generated is the application of constructed knowledge and can be tangible or non-tangible.

The Implementation of Scientific Approach in Teaching English

English teaching in Indonesia remains under the influence of Communicative Language Teaching that has been manifested in various patterns, namely content-based instruction, task-based language teaching, genre-based approach, and competency-based approach. This approach views language as a way of communicating meaning by considering the grammatical and situational contexts both orally and written in the target language.

Classroom targets focus on all components of communicative competence, not limited to grammatical or linguistic competence. The four broad areas of communication skills are (1) linguistic competence, (2) the ability to differentiate between linguistic competence and communication work, (3) the ability to use language as a means of expressing meanings in concrete contexts, (4) knowledge of the social sense of the language type (Madya, 2013). With these points, the goals of English Language Teaching in Indonesia today are developed as follows: (1) improving the student's ability to communicate in the target language both written and oral form correctly and effectively in the four language skills in a variety of contexts for various purposes using a variety of text types and language functions; (2) equipping students with adequate language skills.

Kemendikbud (2013a) stated that to achieve the objectives, the teaching and learning process should be based on the following

principles: (1) students are allowed to learn; (2) learning process applies a scientific approach; (3) learning is competency-based; (4) learning is integrated; and (5) students learn from a variety of learning sources. The scientific method is considered capable to develop both teaching and learning frameworks in implementing certain concepts.

METHODOLOGY

The method used in this study is descriptive-qualitative since the writers attempt to present the existing phenomena or natural setting of the teachers' implementation of the scientific approach in teaching English at senior high schools in Lhokseumawe. The particiants of this research were three English teachers of SMAN 1 Lhokseumawe, SMAN 2 Lhokseumawe, and SMAN 5 Lhokseumawe. Further, the writers used observation sheet as the instrument of the research. Thus, in collecting the data, the writers sat at the back of the classroom and spent considerable time observing the teacher, students and class activities. The observation focused on the teacher's implementation of scientific approach in teaching English. In this case, the researcher takes some notes about the process of teaching on her observation sheet related to: pre-teaching activities, while-teaching activities (including five stages of scientific approach), and post-teaching activities. In analyzing the data from observation sheet, the writers followed the stages of qualitative data analysis by Mile and Huberman (2018). The stages consist of three procedures namely data reduction, data display and conclusion drawing and verification.

RESULTS AND DISCUSSIONS

Results

Based on the findings, this study discovered the teachers' implementation of the scientific approach. The data in this study were taken from the observation distributed to three teachers who taught English in the second grade of senior high school of SMAN 1 *Lhokseumawe*, SMAN 2 *Lhokseumawe*, and SMAN 5 *Lhokseumawe*. The writers observed the teachers who have been teaching the students simultaneously by coordinating it to the observation sheet, which was done in two meeting sessions with the three English teachers. The components observed were the stages of teaching activities based on the regulation, three important activity phases become the focus of the

observation; pre-teaching activity, while-teaching activity, and post-teaching activity.

First Meeting

Pre-teaching Activity

In the phase pre-teaching activity of the first meeting, teacher I started to begin the learning process by greeting the students, asking them to pray together, reflect about the last teaching material, and relate it to the current lesson. Further, the teacher explained the objectives and learning outcomes that will be achieved. The teacher took about five minutes to explain this stage. The teacher asked the students to observe the text in their textbook and each student read the text individually. After students finish reading, she ended the students' activity by saying "Ok class, it is enough to observe the text". Meanwhile, teacher II and teacher III started the pre-teaching activity by greeting students and checking the students' attendant list.

While-teaching Activity

The teachers' activities observed in this phase consist of five sessions; observing, questioning, experimenting, associating, and communicating.

Observing

In this session, teacher I started to stimuli their understanding of the text by saying "what is the text about?", but the students did not know the text type and they only silent. The teacher subsequently explained to them the text type and its generic structures. The teacher gave a clear explanation about the explanation text and described the generic structures of it. Further, teacher II reviewed the material that had been discussed in the previous meeting. The topic was about "because of", "due to", and "thanks to". He explained again about the third phrases and wrote the examples of them on the whiteboard. He explained to the students about the differences between "because of" and "due to". He made clear the topic; he invited them to observe the examples on the whiteboard by paying deep attention to the written sentences and his explanation. Meanwhile, teacher III preferred to propound some questions about the previous topic and also connected them with the present topic.

Questioning

In this questioning session, teacher I asked some students to be volunteers to read the paragraph of the text on the textbook loudly. She said, "well, who wants to read the first paragraph out loud?" One of the students raised his hand and start reading the first paragraph loudly, others also did it before she grouped the students into some group discussions. However, teacher II and III skiped this session.

Experimenting

The students were invited by teacher I to place their seat circle in each group that consists of five students to find different topics by using their media (e.g., handphone and internet). When each group already found the theme of the text, the teacher asked each group to write the text on a piece of paper. After finishing their writing, they were also allowed to find other examples of explanation text on the internet to get more examples of the text. Thus, they got much insight into writing it and got many other text forms to analyze. On the other hand, teacher II engaged the students in an experimenting session, in which the students were invited to make dialogue using cause and effect sentences. They were commanded to work in pairs and he invoked each pair to write it on a piece of paper. He gave the time limit to the students in completing the sentences, each student made the dialogue sentences of cause and effect with his/her partner, using the dictionary was allowed. Furthermore, in this experimenting session, the teacher grouped the students into four groups. The students listened and quickly found their members to make a group after the teacher finished giving the instruction. Each of them was asked to read the material learned in their textbook and discussed it with other group members. They were allowed to ask the teacher for things that they did not know after reading the book. After getting the questions, she answered and gave explanations to the students. She afterward asked the students to write a dialogue on making a reservation, the students were let for free to choose where the dialogue took place.

Associating

Teacher I sought the students to practice writing a text that relates to the theme they found on the internet. After each pair finished their writing, they together recheck and fixed it if there were some errors, they spoke by using Indonesia. The teacher let them use it and did not remind them that they should speak English. She often used Indonesia to give

instructions and explanations. In the whole teaching process, the teacher only used English around 40% and she did not give clear instructions to the students on what should they do. The work discussion took several minutes longer than the previous session. However, teacher II and III did not apply this session in the first meeting.

Communicating

After teacher I ascertained that they already finished their work discussion, she asked them to end the session. She stood in the back corner of the class near the students' group discussion and asked each group to read their writing in front of the class. When one group read the text, other groups listened and asked some questions to the group and the group members answer the questions correctly. In this session, teacher II chose one of the pairs' work and read the dialogue loudly so that all students can hear it. Furthermore, the teacher wrote some questions on a whiteboard, he asked the students to write and complete them individually on a piece of paper, and they submit to him. The teacher checked all exercises that had already been done by students and put them on his table after checking them all. He asked all students to answer the exercises written on the whiteboard orally. He wrote the right answers on the whiteboard. Teacher III asked the students to perform the dialogue in front of the class, each group presented the performance, and each student took part in the dialogue. The teacher used role-play techniques in the performance session. She gave applause to each group performance to appreciate the students' work. All students performed their work although there was the last group performance did not finish the dialogue for a limited time.

Post-teaching Activity

After the session above was completed, teacher I gave the task to the students. Each group was asked to do the assignment to write an explanation text. Before ending the class, she thanked the students for their great work and ended the class by saying *"wassalamua'alaikum wa rahmatullahi wa barakatuh"*. Teacher II gave feedback to the students and he announced them the material that would be learned in the next meeting. The teacher said that they would discuss The Explanation Text. He immediately closed the meeting by saying *"wassalamua'alaikum wa rahmatullahi wa barakatuh"*. In this session, the teacher III did not apply it.

Second Meeting
Pre-teaching Activity

Teacher I gave apperception to the students. Students sat in their own groups' discussions and listened to their teacher. Teacher II started pre-teaching activity by checking students attendant list. While teacher III opened the meeting by giving *salam* and asked them the date of that day; "what date is today?" the students answered it. She immediately checked the students' attendant list and called the students' names.

While-teaching Activity
Observing

Teacher I skipped this session to the associating session. While teacher II explained about the differences of "because of" and "due to". He also asked the students several questions that link the last material and the topic that will be learned. Teacher III showed pictures on the whiteboard; throwing the rubbish, cheating a friend, and corruption. Those three pictures should be guested by students about the topic that would be discussed,they observed the pictures. The teacher afterward explained that they would learn the Hortatory Exposition.

Questioning

In this session, teacher II asked the students several questions that link the previous material and the topic that will be learned. He confirmed them by asking some Indonesian words; "*ada pertanyaan?*" "*sudah ngerti?"* When students seemed already understood the subject matter, he proffered some questions such as "*yang mana causenya? Yang mana efeknya?*. The students, who knew the answers, raised their hands and answered. In the learning process of teacher III, she let the students asked some question related to the Hortatory Exposition.

Experimenting

In this session, teacher II asked the students to work in pairs and he invoked each pair to write it on a piece of paper. He gave the time limit to the students in completing the sentences, each student made the dialogue sentences of cause and effect with his/her partner. After each pair completed writing dialogue sentences, the teacher checked the result of each pair's work. Teacher III explained the students' target content clearly so that it can be easily understood by the students. As she

explained those items, she made sure that the students understood the explanation. She directly asked the students to read the example of the text on their printed book. The students read the example of the text and underlined some new words found in the text. With other group members, they seek the definition of the words in the dictionary and wrote down their meanings below the words.

Associating

In this session, teacher II asked each student to use the English or Indonesian dictionary to find new vocabulary or the vocabulary that they did not know how to write in English while composing dialogue. In teacher III learning activity of this session, the students identified the generic structures of the text in the book. After reading and identifying the text, the students were asked to arrange another text. This text did not arranged in a correct arrangement of the generic structures. The students in each group rewrote the text in a correct sequence and they discussed and analyzed the text together by designating one of the members as a writer

Communicating

In this session, teacher I asked the student to present their group homework. Meanwhile, teacher II asked the students to submit the students written task. Teacher III asked a representative of each group member to read the text. They determined a student who would read the text and the student read the text loudly and listened to other students.

Post-teaching Activity

The teacher I, II and III gave the students feedback and closed the meeting by saying "*wassalamua'alaikum wa rahmatullahi wa barakatuh.*"

Discussions

In the application of the scientific approach, the 2013 curriculum becomes the benchmark for all teaching subjects; the curriculum designed is learner-centered. In other words, Nugraha and Suherdi (2017) mentioned that the students are the subject of learning. Therefore, the teachers, particularly English teachers must carry out all the rules and teaching steps that have been formulated, thus, learning outcomes can be achieved. *Kemendikbud* (2013a) determined three focus points of the scientific approach in the learning process; attitudes (affective), skills

(psychomotor), and knowledge (cognitive). The three points are applied in three phases of learning activities; pre-teaching (follow up), main teaching (whilst), and post-teaching. In this case, the scientific approach learning stages; observing, questioning, experimenting, associating, and communicating belong to the main teaching (whilst), *Kemendikbud* (2013b). Therefore, in carrying out these phases, the role of the teachers is needed by students. Hence, the teacher must genuinely understand the concepts and principles, and most importantly the teacher can carry out the stages of the phase.

The result of the observation showed that the three focus points and stages of the scientific approach that have been carried out by the teachers need to allocate attention in deficiency of the implementation of both the focus points and stages properly. Meanwhile, *Kemendikbud* (2013a) emphasized that teachers must facilitate and develop student competencies by providing motivation and guidance through a variety of teaching materials and implementing five-component activities. Thus, indicators of learning were not fully achieved because students were not involved in all scientific approach learning activities. Hosnan (2014) and Saddhono (2013) said that the purpose of the scientific approach is to make students actively construct the concept, principle through some activities; to observe, to hypothesize, to collect data, to analyze data, to draw conclusions, and to communicate the concept and principle found. Indeed, all of these activities are included in the scientific approach learning stages.

In the pre-teaching activity, the teachers began with a greeting, checking students' attendance list, and starting the lesson. Even, the teacher asked the date and asked the student to print the learning materials. Further, while-teaching activity started from the observing activity, Brown (2000) stated that the observing session is intended to develop the curiosity of the students, to help them attain knowledge, and to invent a substantial learning process. Furthermore, *Kemendikbud* (2013b) asserted that the observing activity is effectively redounded by employing a tape recorder, camera, film or video, and related tools that fit their function and generated media support the observation process. In this finding, one of the teachers used and showed pictures to the students while teaching. She asked them to observe the pictures. Other teachers did not employ the media except writing the learning material on the whiteboard and let the students to pay attention to the material written. In other meetings, they observed the material that was already written in students' printed books. One of them skipped the observing

activity and the teacher did not engage the students to perform the observation activity.

The second session is questioning, each teacher performed differential activities in this session. Each teacher preferred to deliver questions to check students understanding about the pictures showed and the explanation written on whiteboard and book; "*yang mana cause nya? , yang mana effectnya?", "ada yang ditanyakan?"*. Even a teacher asked the students about what topic they were going to learn at that time. *Kemendikbud* (2014) explained that the questioning session is the activity of asking questions regarding the information that is not understood or obtaining additional information. Besides, the questions entail the teachers to perform good criteria questions; brief and clear, inspiring, focus on a certain subject matter, probing and divergent, valid or affirmative question, contributing the students the opportunity to rethink, stimulating the cognitive level increase and interaction process, (*Kemendikbud*, 2014). Thus, *Kemendikbud* formulated the lower and higher question based on the cognitive stages. Based on this observation, it was concluded that the questions performed by the teachers were still in the lower stage level and inadequacy of good criteria. Thus, *Kemendikbud* formulated the lower and higher question based on the cognitive stages. Former argumentation stated by Winne (1979) that lower question-level is to recall the students' verbatim or their word gained previously from the teacher. Meanwhile, the higher question-level bits students to manipulate the information previously gained to perform an answer with logical evidence.

The next activity was the experimenting session, it became the first main activity of the learning process of each meeting. The teachers asked the students to sit in a workgroup discussion or pair and gave them some tasks. The task could be in the form of written or oral activity based on the indicator of learning. *Kemendikbud* (2014) stated that the targets developed in this activity are thorough, honest, decent, respect for other opinions, the ability to communicate and gather information, and lifetime learning habits. *Kemendikbud* (2014) added that the teachers have great roles to explain learning targets, prepare the learning tools, consider timing and place, provide worksheets and share it with the students, guide the students to do the observation, and ask the student to submit their works and evaluate them. Thus, the activities were only modest, such as doing text writing exercises, conversations, and assignments. Hence, the students seemed not to be attracted to do the activity.

The associating session was defined by *Kemendikbud* (2014) that it is the process of thinking logically and systematically on the various empirical facts and gather them to get a conclusion as knowledge. In its application, *Kemendikbud* has formulated eight steps for this session, while the observed teachers did not apply them entirely. Nugraha and Suherdi (2017) stated that the associating session engages the students and teachers in analyzing and categorizing the information gained from the experiment. The communicating activity as the last session was used by the teacher to ask the student to perform their work results orally or written and evaluated at that time. If they did not have enough time left, they postponed it until the next meeting. *Kemendikbud* (2014) defined the communicating session as the submission of observations and conclusions based on the results of the oral analysis, in writing, or other media.

CONCLUSION AND SUGGESTION

This qualitative research showed that the result of the observation toward the three English teachers on the implementation of the five stages of the scientific approach uncovered that they did not carry out the five stages completely. Therefore, the result of this study supports the idea that English teachers should improve their knowledge and skills related to the implementation of the scientific approach. The teacher should master, understand, and be able to carry out the teaching process by following the whole stages of the scientific approach. Class mastery and time management are vital for the learning process. Thus, the teachers should consider the above-mentioned points. Besides, the teachers are demanded to teach the students with prepared readiness. Interesting supporting media and appropriate learning material and methods must be considered by the teachers in teaching so that the students will be motivated to learn.

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